

Immature Stages of *Paracynotrachelus longiceps* (Motschulsky) (Coleoptera: Attelabidae: Apoderinae) from Korea

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ABSTRACT

The egg, larva, and pupa of *Paracynotrachelus longiceps* (Motschulsky) are described and illustrated. The species is a well-known forest pest and lives on such host plants as *Quercus acutissima*, *Q. aliena*, *Q. mongolica*, and *Q. serrata*. Taxonomic notes and cradle structure are also provided.

Key words: Immature stages, *Paracynotrachelus*, Apoderinae, Coleoptera, Korea

INTRODUCTION

The genus *Paracynotrachelus* Voss, 1924 belongs to the tribe Trachelophorini of the subfamily Apoderinae. Twenty three species are known in the world (Morimoto, 1992) and only one species, *P. longiceps* (Motschulsky), is reported in Korea (Hong et al., 2001).

Although this species is well studied as a forest pest, its immature stages are poorly known. Systematics and cradle structure of the immature stages of *P. longiceps* of Korea have not been studied.

The present paper gives detailed morphological description and illustration of immature stages of *P. longiceps*.

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MATERIALS AND METHODS

Larvae were reared on the host plants of Sawtooth Oak, Oriental white Oak, Mongolian Oak, and Serrata Oak in the laboratory. Materials used in this study were preserved in 70% ethyl alcohol. Larvae and pupae were cleared in 10% KOH solution for 30 minutes and then rinsed in water. The terminology follows Anderson (1947), May and Sands (1986), Burke (1968), Louw (1990), and Uehara and Suzuki (1998).

SYSTEMATIC ACCOUNTS

Family Attelabidae

Subfamily Apoderinae Voss, 1926

Genus *Paracynotrachelus* Motschulsky, 1860

***Paracynotrachelus longiceps* (Motschulsky), 1860 (Figs. 1, 2)**

Material examined. 20 exs., Ha-ri, Songcheon-dong, Andong-si, Gyongsangbuk-do, 10 Jun 2001. 20 exs., Hapgang-ri, Jinbo-myeon, Cheongsong-gun, Gyongsangbuk-do, 20 Jun. 2001. 25 exs., Hapgang-ri, Jinbo-myeon, Cheongsong-gun, Gyongsangbuk-do, 6 Jun 2002, 35 exs., Ha-ri, Songcheon-dong, Andong-si, Gyongsangbuk-do, 07 Jul. 2003.

Description.

Egg. Length 1.2-1.4 mm, width 1.0-1.2 mm (n = 20). Yellow, ovoid.

Last instar Larva (Fig. 1A). Length 6.0-7.0 mm, width 3.0-3.2 mm (n = 20). Body with sparse to abundant setae, thorax slender than abdomen, with moderately dense asperities.

Head (Fig. 1D) retracted, yellow, slightly longer than wide, posterior margin with a larger flattened extension under throat. Antenna (Fig. 1B) with two distinct segments, basal segment ring-like, segment 2 with conical sensory papilla, 4 spine-like setae and with one sensillum. Catapophyses in same plane as frons. Hypopharyngeal bracon absent. Frontal suture indistinct. Epicranial suture present. Endocarina distinct, approximately half as long as frons. Six minute posterior epicranial setae and one pair of sensilla. Frons with 4 pairs of frontal setae and with 1 pair of sensilla. Eight pairs of dorsal epicranial setae present. Three pairs of lateral epicranial setae present. Clypeus (Fig. 1E) with 2 pairs of clypeal setae and one sensillum. Anterior margin of labrum produced anteriorly at sides and median part weakly arched. Labrum (Fig. 1E) trilobed at anterior margin, nearly straight as posterior margin, three pairs of setae and one pair of sensilla present. Labral rods moderately slender and long, subparallel. Epipharynx with three anterolateral, two anteromedian setae and median sensilla multiple which occur on both side of the torma. Mandible (Fig. 1C) wide, short, with apical teeth, and with 2 mandibular setae and 2 sensilla. Labial palpus with two segments, segment 1 with 1 seta and 1 sensillum, segment 2 with 1 seta and 1 sensillum. Prementum (Fig. 1F) without distinct dividing line from postmentum and two pairs of setae present. Postmentum with 4 pairs of setae and 2 pairs of sensilla. Maxillary palpus (Fig. 1F) with two segments, segment 1 with 1 seta and 2 sensilla, segment 2 with 1 seta and 1 sensillum. Stipes with 3 setae and 2 sensilla. Stipes and postmentum marginally densely covered with

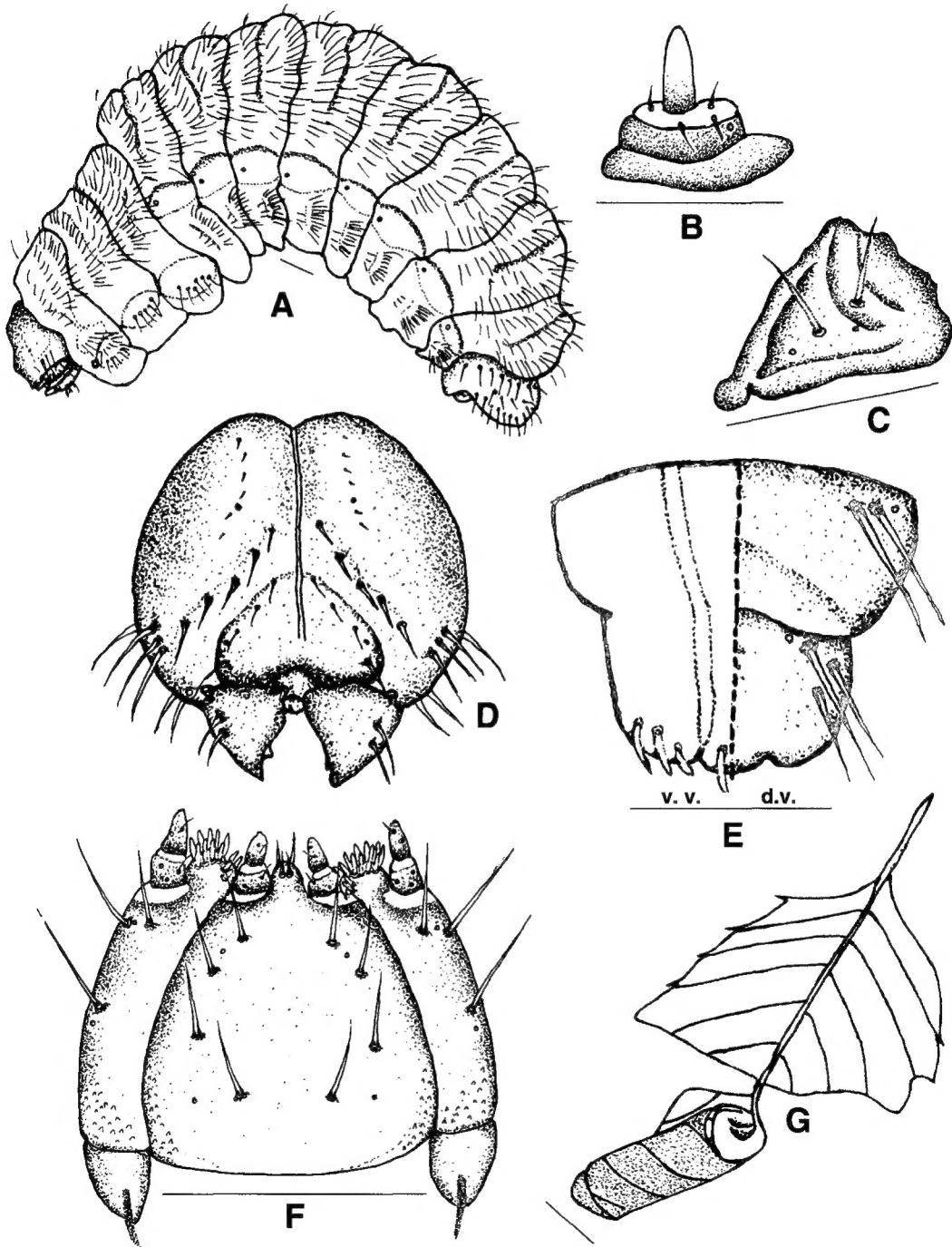


Fig. 1. Larva and cradle of *Paracynotrachelus longiceps*. A, Last instar larva (l.v.); B, Antenna (d.v.); C, Mandible (b.v.); D, Head (d.v.); E, Clypeus and labrum (v.v. and d.v.); F, Lower mouth parts (d.v.); G, cradle (BC Type). b.v., buccal view; d.v., dorsal view; l.v., lateral view; v.v., ventral view. Scale bars (mm) = 0.04 (B), 0.2 (E), 0.5 (C, F), 1.2 (A), 6 (G).

spinules. Mala with 22 setae.

Pronotum with transverse smooth plate.

Abdomen with 8 pairs of spiracles, spiracles all lateral, and marginal air-tubes absent. Typical abdominal segment with two folds, conically humped dorsally, 9th segment itself conically produced caudad and with 22 pairs of setae. Anus subventral, transverse.

Pupa (Fig. 2A). Length 7.0–8.0 mm, width 3.0–3.2 mm ($n = 10$), body yellow.

Head. Two pair of vertical setae, one pair of orbital setae, three pairs of supraorbital setae, no postorbital seta and three pairs of rostral setae present.

Thorax. Pronotum with four pairs of apical setae straight to slightly curved and seven pairs of lateral setae; three pairs of discal setae and three pairs of basal setae present. Mesonotum with 6 pairs of mesonotal setae. Metanotum with seven pairs of metanotal setae. Legs with three pairs of femoral setae.

Abdomen. Prodorsum of typical abdominal segments with two pairs of short prodorsal setae; 8 pairs of postdorsal setae; one pair of spiracular setae and four pairs of pleural setae. Segment VI with three pairs of postdorsal short setae. Segment VII–VIII with nine pairs of postdorsal setae. Segment IX with a single conical pseudocercus (Fig. 2B) bearing 11 pairs of pseudocercal setae. Spiracles clearly visible, but unpigmented.

Host Plants. *Quercus acutissima* Carruth, *Q. aliena* Blume, *Q. mongolica* Fisch and *Q. serrata* Thunb.

Remarks. Larva of species is characterized by the following characters: Body with sparse to

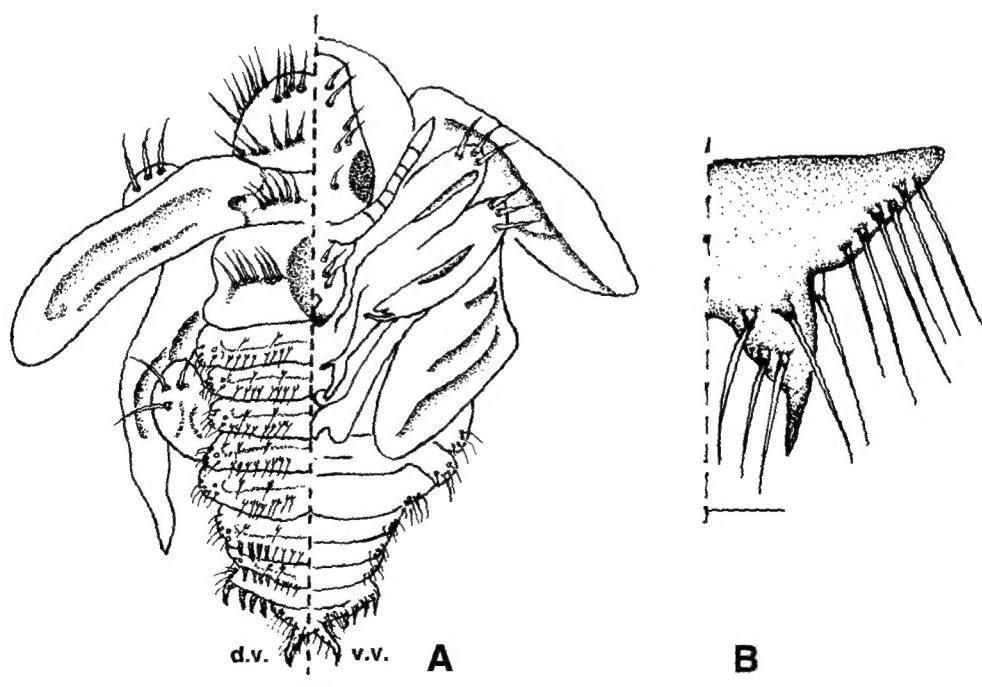


Fig. 2. Pupa of *Paracynotrachelus longiceps*. A, Pupa (d.v. and v.v.); B. Pseudocercus (d.v.). d.v., dorsal view; v.v.: ventral view. Scale bars (mm) = 0.2 (B), 0.4 (A).

abundant setae and moderately dense asperities, stipes and postmental margin densely covered with spinules.

Cradle of this species is similar to StC Type (Straight-cutting Type), but is distinguished by the following character: Leaf cutting pattern does not cut main vein.

Distribution. China, Russia, Korea

Cradle (Fig. 1G). Length 20.0–24.0 mm, width 10.0–13.0 mm (n = 50).

Leaf cutting pattern : BC Type (Both-sides-cutting Type)

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한국산 왕거위벌레 (딱정벌레목: 거위벌레과: 목거위벌레아과)의
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요 약

왕거위벌레 (*Paracynotrachelus longiceps*)의 알, 유충, 번데기에 대한 그림과 기재를 행하였다. 이 종은 산림해충으로 잘 알려져 있으며, 상수리나무, 갈참나무, 신갈나무와 졸참나무가 기주식물이다. 또한 이 종의 분류학적 특징 및 요람구조도 소개하였다.